

**Work Order ID 59026**

Tuesday, May 25, 2010 8:21:21 AM



Page 1

Item ID: D212-664-101

Accept



Setup Start



Revision ID:

Item Name: Crosstube Fwd

Stop



Start Date: 5/25/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/10/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan: *11*Date: *10-5-25*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

**Sequence ID/  
Work Center ID****Operation  
Description**Set Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp**Draw Nbr****Revision Nbr**

D212-664-141

Rev D

100

0.00



## DOCUMENT CONTROL

DC

Document Control

## Memo

0.00

Photocopy bluefile and create labels as per PPP D212-664-101 CHG003

*S 10-6-10*

110

0.00



## Pick Kit

## Packaging

## Memo

0.00

Packaging

Packaging

*IK* *2* *MB 10-06-10*

120

0.00



## BENDING MACHINE - CROSSTUBES

## Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-141 using CNC bender program 212-fw and Folio D212-664-101

*IK* *2* *MB 10-06-10*

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector	
			Initial Chief Eng	Action Description Chief Eng	Sign & Date				

NOTE: Date & initial all entries

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**Item ID:** D212-664-101

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**Setup****Start****Revision ID:****Item Name:** Crosstube Fwd**Stop****Start Date:** 5/25/2010 **Start Qty:** 1.00**Cust Item ID:****Required Date:** 6/10/2010 **Req'd Qty:** 1.00**Customer:****Reference:****Approvals:****Process Plan:****Date:****Tooling:****Date:****Run****Start****QC:****Date:****SPC (Y/N):****Date:****Stop****Sequence ID/  
Work Center ID**

130



QC

Quality Control

**Operation  
Description**

QC15- Crosstube Dimensional Check

**Set Up/  
Run Hours**

0.00

**Draw  
Number****Draw  
Rev.****Plan  
Code****Accept  
Qty****Reject  
Qty****Reject  
Number****Insp.  
Stamp**

5/10/06/14

SP1

140



Crosstubes

Crosstubes

0.00

**Memo**

0.00

1-Drill pilot holes in tube as per Dwg D212-664-141 using drill Jig DT8548 &amp; DT8549,using drill table DT8577, set-up towers in hole #7 as per QSI 10

2-Ream hole to finish size in tube as per Dwg D212-664-141 using drill Jig DT8548 &amp; DT8549. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-141

4-Deburr &amp; Inspect for surface damage. Repair damage within limits as per Dwg D212-664-141

MB  
10-06-14MB  
10-06-14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

150



HandFXtube

Operation  
Description

Crosstubes Chemical Conversion

Set Up/  
Run Hours

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Hand Finishing Crosstubes

Memo

0.00

Chemical Conversion Coat within 24 hours of bending and drilling

1 - - *AWM*  
*10-06-15*

160



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

*8/06/15**40* \_\_\_\_\_

170



Outsource2

Outsource process - NDT per QSI038 4.1

0.00

*CX 10/16/18 ①*

Outsource process - NDT

Memo

0.00

Liquid Penetrant Inspection as per QSI 038  
Issue P/O: *1222*  
LPI as per ASTM 1417 Level 2  
Attach copy of NDT results to work order

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Start Date: 5/25/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/10/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

180



Packaging

Packaging

Operation  
DescriptionReceive & Inspect for Damage & Mat'l Certs  
PackagingSet Up/  
Run Hours

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberReject  
StampInsp.  
Stamp

190



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Inspect for damage &amp; ensure results are as per Dwg D212-664-141

*PD/10/18/10**10/10/06 21/10*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Cust Item ID:

Required Date: 6/10/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

200



SprayPaint

Operation  
Description

Spray Painting per QSI005 4.2

Set Up/  
Run Hours

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Spray Painting

Memo

0.00

1-Prime inside and outside crosstube as per QSI 005 4.2  
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 9:30  
Finish Time: 10:30

PAINT:

Start Time: 3:00  
Finish Time: 4:30

210



QC

Quality Control

QC14- Inspect Spray Paint

0.00

Memo

0.00

Then, Wrap in plastic bag to protect from scratches

W 10 06 21 (1)

2T 10-06-22

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**Work Order ID 59026**

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Item ID: D212-664-101

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Revision ID:

Item Name: Crosstube Fwd

Stop



Start Date: 5/25/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/10/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center ID

220



Crosstubes

Operation  
DescriptionSet Up/  
Run HoursDraw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

0.00

Crosstubes

Memo

0.00

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe  
 2-Install supports with magnobond as per QSI 015 Adhere for 12 Hrs  
 A/R 6398 Magnobond Batch: 114021

*Torqnt ml 10 06 23 exp. 01/2011*

230



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

*S vol 6123*

*ml 10 06 22 (1)*

240



Packaging

Packaging

Pick Kit

0.00

Memo

0.00

*Red 9/24 (1)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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Item ID: D212-664-101

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Setup Start



Revision ID:

Item Name: Crosstube Fwd

Stop



Start Date: 5/25/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/10/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_

Date: \_\_\_\_\_

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start



QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N): \_\_\_\_\_

Date: \_\_\_\_\_

Stop

Sequence ID/  
Work Center ID

250



QC

Quality Control

Operation  
Description

QC4- 100% Inspect kits for completeness

Set Up/  
Run Hours

0.00

Draw  
NumberDraw  
Rev.Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

8/10/06/24

40

260



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPP D212-664-101

MVR

10/06/24 4

270



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

L

10/06/24 4

CZ101cel24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

# Picklist Print

Tuesday, May 25, 2010 8:21:27 AM

Page 1

Work Order ID: 59026



Parent Item: D212-664-101



Parent Item Name: Crosstube Fwd

Comments: IPP Rev:E 04.02.16 Reformat KJ/DS

Start Date: 5/25/2010

Required Date: 6/10/2010

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM  
IPP Rev:G 07-04-30 As per Rev C JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ D212-664-101TRN	Replacement	Mfg/ Manufactured	Bin No	Primary	Last	Route 110	Unit of Each	Qty on 2.0000	Qty per Kit 1	Total 1	Qty	Date	Status

Crosstube Turning Detail

## Location

LG  
58655  
58656

## Loc Qty

2  
1  
1

## Loc Code

1X

D3595-063-450



Manufactured

No

230

Each

54.5790

4

4.210526

RUBBER CUSHION

## Location

LG  
53775  
58161

## Loc Qty

54.57897368  
26.5789737

28

## Loc Code

10-06-22

MS21920-25



Purchased

No

220

Each

69.0000

4

4

Clamp(per MIL-DTL-8783C)

## Location

ST451  
113281  
113282  
113744  
114141

## Loc Qty

69  
25  
18  
1  
25

## Loc Code

10-06-22

3# 114759 x4

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Work Order ID: 59026



Parent Item: D212-664-101



Parent Item Name: Crosstube Fwd

Start Date: 5/25/2010

Required Date: 6/10/2010

Comments: IPP Rev:E 04.02.16 Reformat KJ/DS

Start Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM  
IPP Rev:G 07-04-30 As per Rev C JLM

Required Qty: 1.00

Component Item ID/ D2893-1	Replacement	Mfg/ Manufactured	Bin No	Primary	Last	Route 220	Unit of Each	Qty on 51.0000	Qty per Kit 2	Total 2	Qty	Date	Status

2.75 Support

Location	Loc Qty	Loc Code
LG	51	
53125	9	
53340	2	
<u>53774</u>	20	
56354	20	

10.06.22

D3428-1



Placard

AN6-35A



BOLT

AN6-36A



Bolt

Location	Loc Qty	Loc Code
ST343	58	
113422	30	
114341	28	

114341  
4

114341  
4

Location	Loc Qty	Loc Code
ST343	71	
113121	21	
114330	50	

114330

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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Parent Item Name: Crosstube Fwd

Start Date: 5/25/2010

Required Date: 6/10/2010

Comments: IPP Rev:E 04.02.16 Reformat KJ/DS

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29

Remove Coments on Pick List JLM

IPP Rev:G 07-04-30

As per Rev C

JLM

Component Item ID/ MS21042L6	Replacement Barcode	Mfg/ Purchased	Bin No	Primary	Last	Route 240	Unit of Each	Qty on 351.0000	Qty per Kit 6	Total 6	Qty ✓	Date Signature	Status
Nut													

## Location

ST300	351
111578	151
114495	200

## Loc Qty

111578

114378

## Loc Code

AN960JD616

Washer

NAS1149D0663J

Purchased

No

240

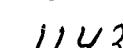
Each

0.0000

18



18



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

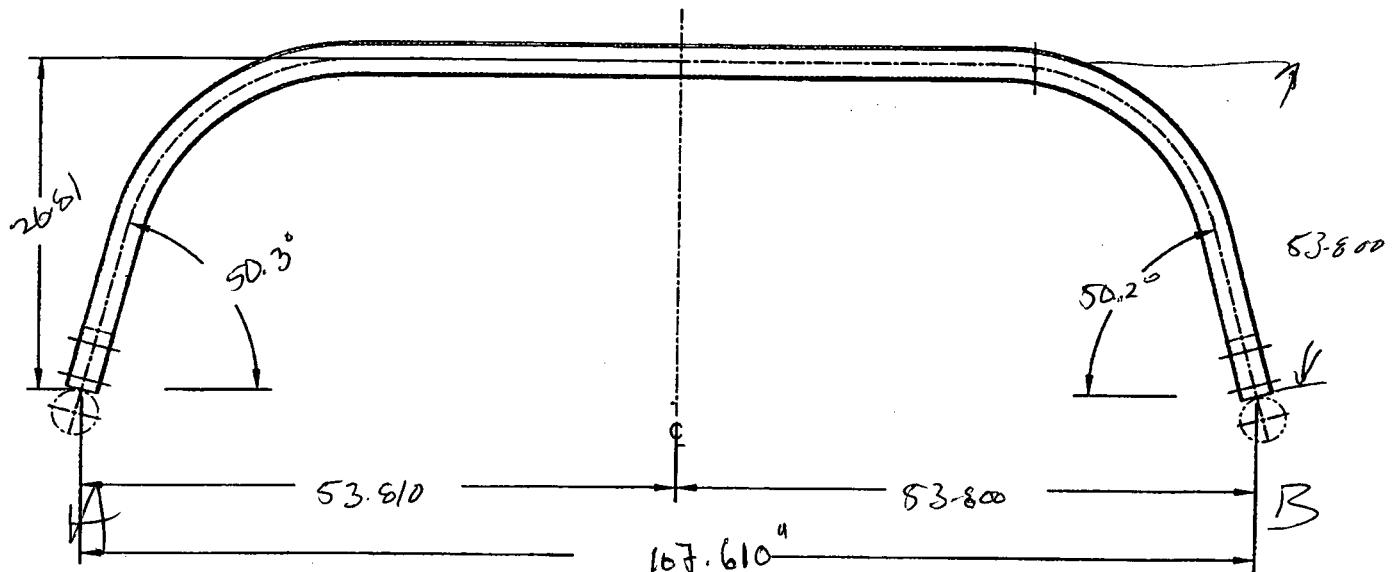
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	59624
Description: Crosstube High Fwd (205/212/412)	Part Number:	D212-664-101
Inspection Dwg: D212-664-141 Rev: D		Page 1 of 1

Required Dimension	Min	Max
Height	26.79	27.05
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.7



Comments

QC15 Inspection	<i>S</i>
Date	10/06/14

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.31	Dimensions updated per Dwg Rev C	KJ/JM	
C	10.04.01	Dwg Rev updated	KJ	<i>J</i>

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
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• NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

Item	Qty -141	Qty -141B	Part Number	Description
1	X		D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
2		X	D212-664-141B	CROSSTUBE ASSEMBLY (214 HIGH FWD)
3	1	1	D6005-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	4	4	MS21920-25	CLAMP (OR MS21920-26)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6005-128  
FINISHED LENGTH = 126.514±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF  
USING VIBRATING STYLUS
- 7) WEIGHT: D212-664-141 = 33.6 lbs (PER IIN-D212-664)  
D212-664-141B = 33.6 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO. 39024BB/10-3-25**RELEASED**

2009-10-29

MM

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS: ADD -141B (ZN B4-2, D4-2); REMOVED REF & ADD TOLERANCES (ZN B4-3, C6-3, C8-3 & B6-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	<u>PH</u>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	<u>90</u>	DRAWING NO.	REV. D
MFG. APPR.	<u>DS</u>	D212-664-141	SHEET 1 OF 4
APPROVED	<u>NO</u>	TITLE	SCALE
DE APPR.	<u>NO</u>	XTUBE ASSY (205/212/412 HI FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY OTHER PURPOSE OR DISCLOSED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

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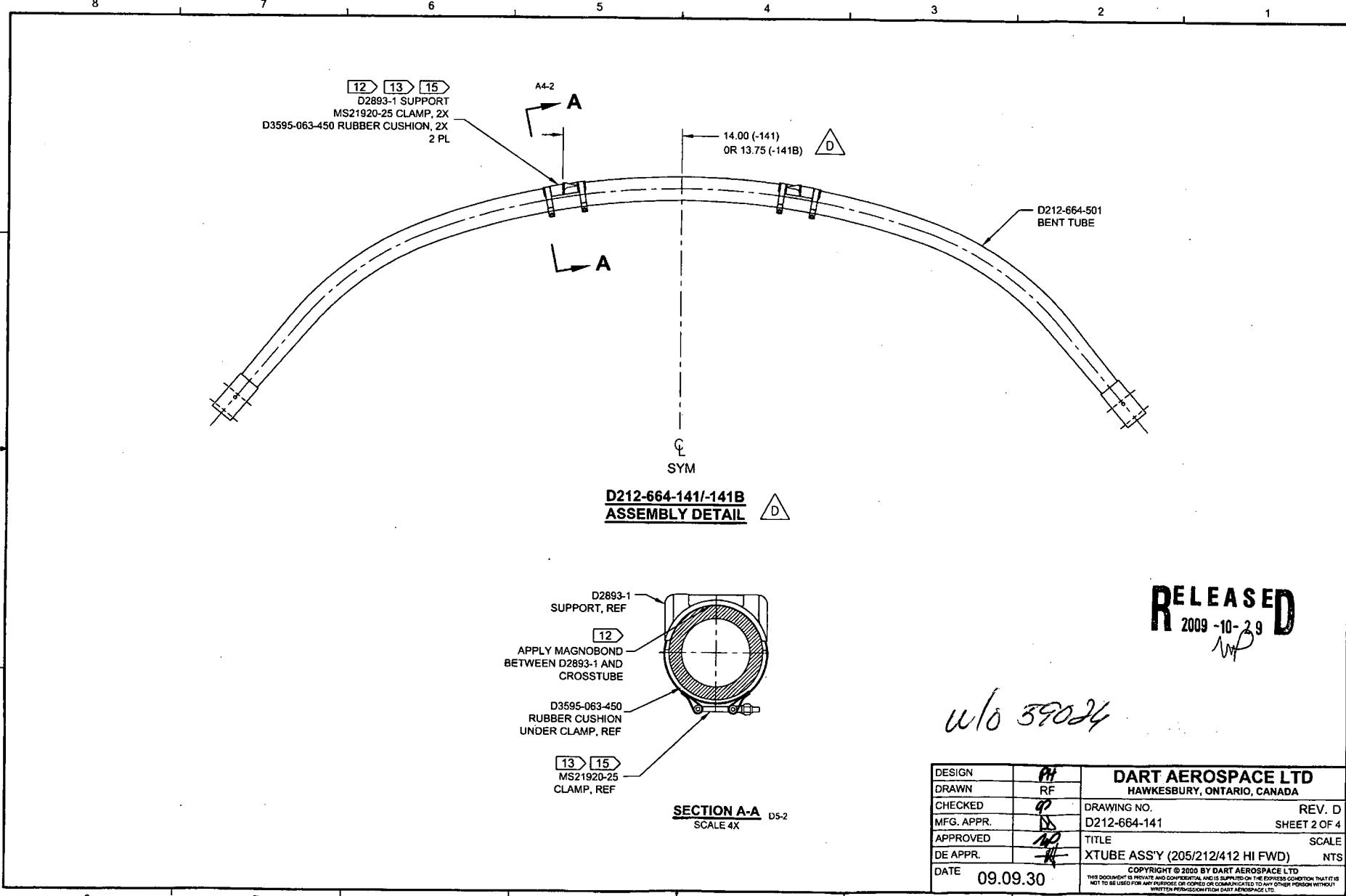
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN	RF	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	PP	DRAWING NO. REV. D
MFG. APPR.	DS	D212-664-141 SHEET 2 OF 4
APPROVED	MM	TITLE SCALE
DE APPR.	MM	XTUBE ASSY (205/212/412 HI FWD) NTS
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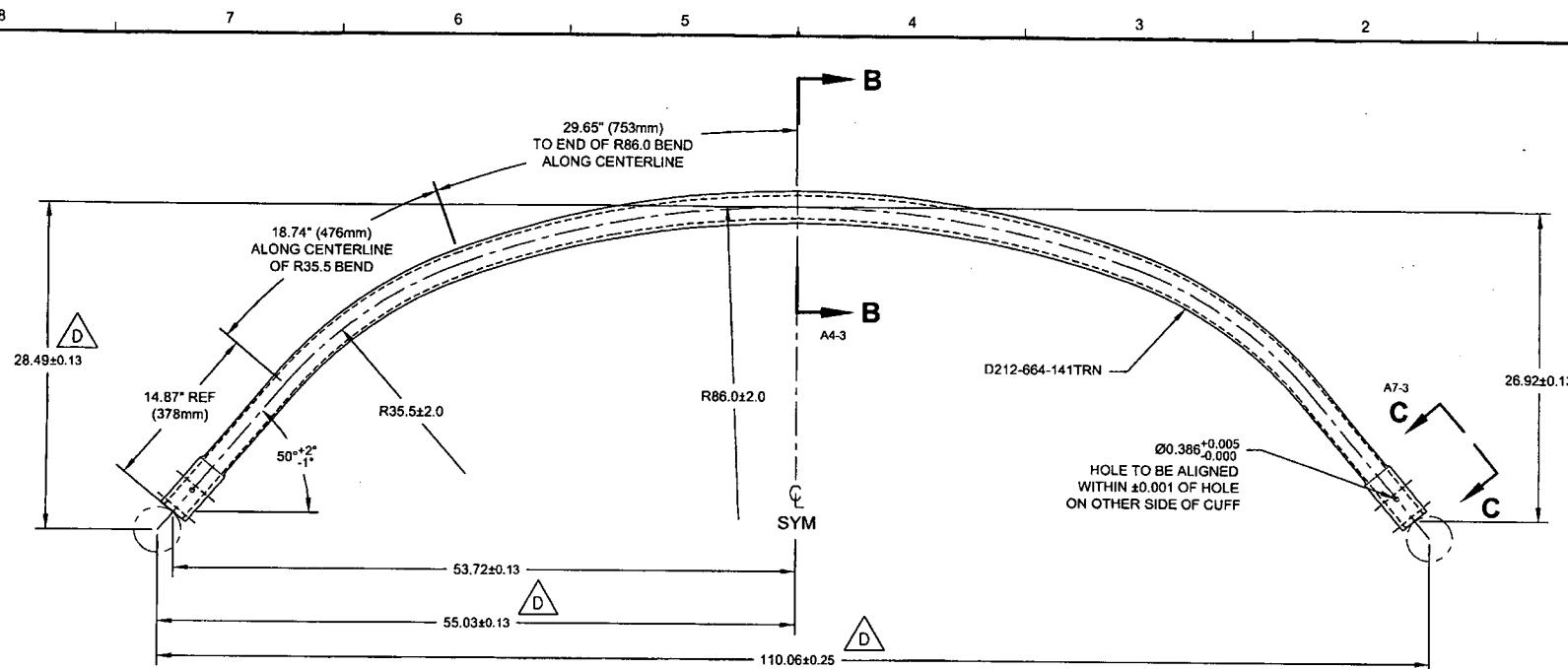
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DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

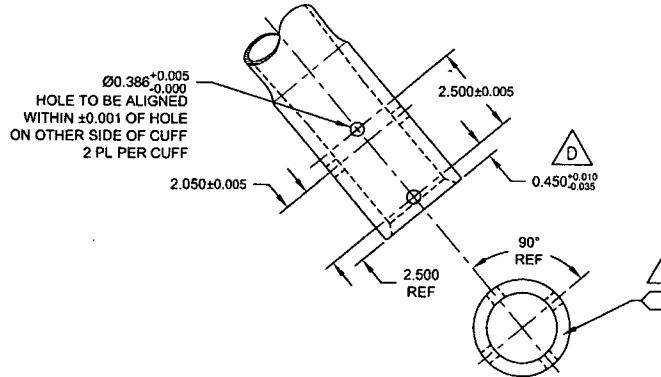
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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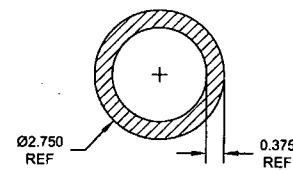
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**D212-664-501**  
BENDING AND DRILLING DETAIL **10** **D**



VIEW C-C: CUFF DETAIL **C2-3**  
 SCALE 3X



**RELEASED**  
 2009-10-29  
*WIA 58026*

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CHECKED	<b>PH</b>	DRAWING NO.
MFG. APPR.	<b>PH</b>	D212-664-141
APPROVED	<b>PH</b>	REV. D
DE APPR.	<b>PH</b>	SHEET 3 OF 4
DATE	<b>09.09.30</b>	TITLE
		XTUBE ASSY (205/212/412 HI FWD)
		NTS

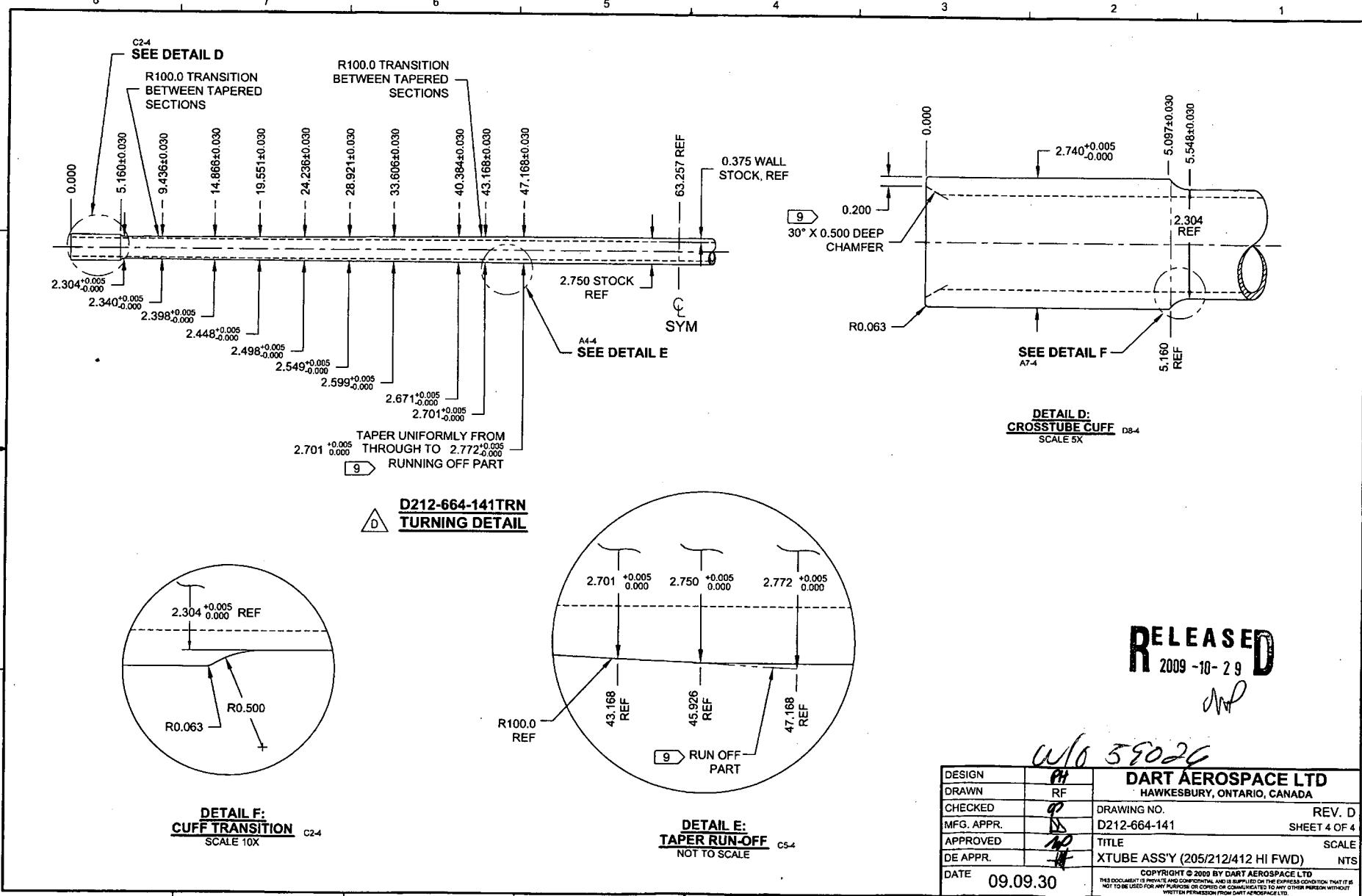
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_  
 Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN	PH	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	99	DRAWING NO.
MFG. APPR.	DA	D212-664-141
APPROVED	DA	REV. D
DE APPR.	DA	SHEET 4 OF 4
DATE	09.09.30	TITLE
		XTUBE ASS'Y (205/212/412 HI FWD) NTS

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# LIQUID PENETRANT TEST REPORT

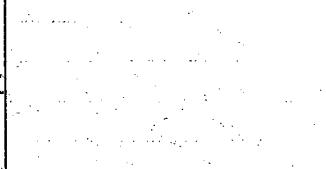
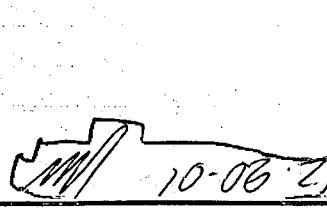
P- 15326

CLIENT	D.A.T Aerospace		DATE	JUNE 18-2010		PAGE	1	OF	1
ATTENTION	LINDA		ACUREN JOB NO.	188-10-0769		TIME	AM <input checked="" type="checkbox"/>	PM <input type="checkbox"/>	
ADDRESS	1270 ABERDEEN ST. HAWKES BURY ON.		PO/WO NO.	F212A		WORK LOCATION	MAIN SHOP - HAWKES BURY		
PROJECT	KOT 1K7		ACCEPTANCE STD.			REV./DATE			
ITEM(S) EXAMINED	F.P.I. ON CROSS TUBES AND MACHINED PARTS 5 - CROSS TUBES. 57 - MACHINED PARTS								

JOB DESCRIPTION	PROCEDURE NO.	LT-0002	REV./DATE	—	TECHNIQUE NO.	LT-TECH2	REV./DATE	—
PART NO.	—		MATERIAL	ACUDINE ALUMINUM		THICKNESS	Various	
SCOPE	WET FLUORESCENT LIQUID PENETRANT INSPECTION CARRIED OUT 100% EXTERNAL							

TEST DETAILS										
METHOD	<input checked="" type="checkbox"/> FLUORESCENT		<input type="checkbox"/> VISIBLE		<input checked="" type="checkbox"/> WATER WASH		<input type="checkbox"/> SOLVENT REMOVABLE		<input type="checkbox"/> POST EMULSIFIED	
FAMILY BRAND	MAGNAFLUX				BLACK LIGHT S/N 16459		<input type="checkbox"/> OUTPUT > 1000 $\mu$ W/cm <sup>2</sup>		<input type="checkbox"/> AMBIENT < 2 fc	
PENETRANT	ZL 67		MINIMUM Dwell TIME 45 10		MIN.		LIGHTING EQUIP.		<input type="checkbox"/> FLASHLIGHT	
PENETRANT REMOVER	1120		MINIMUM DRY TIME		>10 MIN.		TROUBLELIGHT		<input type="checkbox"/> OUTPUT > 100 fc @ SURFACE	
DEVELOPER	SKD 52		MINIMUM Dwell TIME		10 MIN.		OTHER LAB NO		CAL DUE DATE	
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS		<input type="checkbox"/> AQUEOUS		<input type="checkbox"/> DRY				OCT-19-2010	

TEST SURFACE										
SURFACE CONDITION	<input type="checkbox"/> AS GROUND		<input type="checkbox"/> AS WELDED		<input checked="" type="checkbox"/> MACHINED		<input type="checkbox"/> SHOT BLASTED		<input checked="" type="checkbox"/> CLEAN BARE METAL	
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/20°F		<input type="checkbox"/> -4°C/20°F TO 10°C/50°F				<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F		<input type="checkbox"/> > 52°C/125°F	

RESULTS- ( <input type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL )									
<p>1 - W.O. 59047 - CROSS TUBE ✓</p> <p>1 - W.O. 59026 - CROSS TUBE ✓</p> <p>1 - W.O. 59027 - CROSS TUBE ✓</p> <p>1 - W.O. 59278 - CROSS TUBE ✓</p> <p>1 - W.O. 59279 - CROSS TUBE ✓</p> <p>37 - W.O. 58631 - STAPS ✓</p> <p>20 - W.O. 58634 - SLEEVES ✓</p>									
  10-06-21									

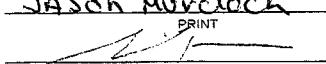
## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

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In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE	JASON MURDOCK		SIGNATURE	DTR # E27415	
TECHNICIAN (SIGNATURE):			REPORT		
NAME (PRINT):	Mike Johnson		2 <sup>nd</sup> TECHNICIAN	REVIEWED BY:	
CGSB LEVEL	1 <sup>st</sup> TECHNICIAN	SNT LEVEL	2 <sup>nd</sup> TECHNICIAN	NAME	
CGSB REG. NO.	CGSB LEVEL		SNT LEVEL		INITIALS
CGSB REG. NO.	CGSB REG. NO.		CGSB REG. NO.		

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